ABSTRACT OF THE DISCLOSURE

There is disclosed a method for producing an optical waveguide substrate at least comprising a step of forming a silica film to be an optical waveguide having a thickness of 5 μm or more on a surface of a substrate by oxidizing a silicon substrate wherein the oxide film is formed by forming an oxide film having a thickness of 0.3 μm or more on the silicon substrate first, and then oxidizing the silicon substrate in an oxidizing atmosphere heated at 1000°C or higher to form a remaining oxide film, and also disclosed an optical waveguide substrate produced by the method. There can be provided a method for producing an optical waveguide substrate comprising oxidizing a silicon substrate to a relatively deep part wherein particles generated due to exfoliation and oxidation of silicon atoms are quite few on the silica film, and thus a high quality optical waveguide substrate is produced, and also provided an optical waveguide substrate produced by the method.